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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,243

01/19/2006

Tae-Won Seo

31656-227502

9608

26694

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12/03/2008

VENABLE LLP

P.O. BOX 34385

WASHINGTON, DC 20043-9998

EXAMINER

SAFAIPOUR, BOBBAK

ART UNIT

PAPER NUMBER

2618

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,243	<b>Applicant(s)</b> SEO ET AL.	
	<b>Examiner</b> BOBBAK SAFAIPOUR	<b>Art Unit</b> 2618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 4 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/19/06</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement submitted on 1/19/2006 has been considered by the Examiner and made of record in the application file.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-3 and 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant's Admitted Prior Art (hereinafter AAPA)** in view of **Ikata et al. (US 2001/0040487 A1; hereinafter Ikata)**.

Consider **claim 1**, AAPA discloses a dualduplexer comprising: a dualduplexing means including a transmitting input unit (figure 1, page 1, lines 17-28; read as 1<sup>st</sup> duplexer receiving unit 14), a receiving input unit (figure 1, page 1, lines 17-28; read as 1<sup>st</sup> duplexer receiving unit), a transmitting output unit (figure 1, page 1, lines 17-28; read as 2<sup>nd</sup> duplexer transmitting unit 17) and a receiving output unit (figure 1, page 1, lines 17-28; read as 2<sup>nd</sup> duplexer receiving unit), wherein the transmitting input unit, the receiving input unit, and the transmitting output unit and the receiving output unit are used in common (figure 1, page 1, lines 15-34; repeater 11 using duplexers).

Although AAPA discloses a transmitting input unit, a receiving input unit, a transmitting output unit and a receiving output unit (figures 1-2), AAPA fails to specifically that transmitting input unit, receiving input unit, transmitting output unit and receiving output unit are connected in the form of a matrix.

In related art, Ikata discloses a dualduplexer having a matrix structure. (figures 4-5; paragraph 19; read as arranged in matrix form)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the matrix structure of Ikata into the dualduplexer of AAPA in order to realize a duplexer device of compact size and a low cost.

Consider **claim 5**, AAPA discloses a method for fabricating a dualduplexer using an amplifier in common (figure 1, page 1, lines 15-34; read as repeater 11 using duplexers), comprising the steps of: a) filtering a transmitting (Tx) signal inputted through a first port of a dualduplexer in a transmitting input unit (Tx\_1) of the dualduplexer (figure 2; page 2, lines 5-19; read as first duplexer 14) and outputting a resultant signal to a low noise amplifier (figure 2; LNA 16) through a second port (figure 2; page 2, lines 5-19; read as second duplexer 15); b) performing low noise amplification on the signal inputted to the low noise amplifier (figure 2; read as LNA 16), performing high power amplification in a high power amplifier (figure 2; read as HPA 17), and outputting a resultant signal to a third port of the transmitting output unit (Tx\_2) of the dualduplexer (figure 2; page 2, lines 5-19; read as third duplexer 18); and c) radiating the signal inputted through the third port in the transmitting output unit (Tx\_2) of the dualduplexer to the outside through a fourth port by performing filtering (figure 2; page 2, lines 5-19; read as fourth duplexer 19).

Although AAPA discloses a transmitting input unit, a receiving input unit, a transmitting output unit and a receiving output unit (figures 1-2), AAPA fails to specifically that transmitting input unit, receiving input unit, transmitting output unit and receiving output unit are connected in the form of a matrix.

In related art, Ikata discloses a dualduplexer having a matrix structure. (figures 4-5; paragraph 19; read as arranged in matrix form)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the matrix structure of Ikata into the dualduplexer of AAPA in order to realize a duplexer device of compact size and a low cost.

Consider **claim 2**, and **as applied to claim 1 above**, AAPA, as modified by Ikata, disclose the claimed invention wherein a low noise amplifying means for performing low noise amplification on a signal outputted from an input port of the dualduplexing means (AAPA: figure 1; read as LNA 15); and a high power amplifying means for performing high power amplification on the signal outputted from the low noise amplifying means and transmitting the amplified signal to the dualduplexing means (AAPA: figure 1; read as HPA 16).

Consider **claim 3**, and **as applied to claim 1 above**, AAPA, as modified by Ikata, disclose the claimed invention wherein the dualduplexing means includes: a first port for transmitting/receiving signals to and from a base station (AAPA: figure 2; page 2, lines 3-19; read as first duplexer 14); a second port for outputting the signals with separated frequency which are inputted from the transmitting input unit and the receiving input unit to the low noise amplifier (AAPA: figure 2; page 2, lines 3-19; read as second duplexer 15); a third port for receiving a signal from the high power amplifying means (AAPA: figure 2; page 2, lines 3-19; read as third duplexer 18); and a fourth port for outputting a high-power-amplified transmitting

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signal and receiving a signal transmitted from the outside (AAPA: figure 2; page 2, lines 3-19; read as fourth duplexer 10).

Consider **claim 3**, and **as applied to claim 1 above**, AAPA, as modified by Ikata, disclose the claimed invention wherein comprising a step of: d) if a signal is received through the fourth port from the outside (AAPA: figure 2, fourth duplexer 19), filtering the received (Rx) signal in a receiving input unit (Rx\_1) of the duplexer, amplifying the filtered signal in the low noise amplifier (AAPA: LNA 16) through the second port (AAPA: figure 2; second duplexer 15) and in the high power amplifier (AAPA: figure 2; HPA 17), filtering the amplified signal in a receiving output unit (Rx\_2) of the second duplexer through the third port (AAPA: figure 2; third duplexer 18), and radiating the filtered signal through the first port (AAPA: figure 2; first duplexer 14).

*Allowable Subject Matter*

**Claim 4** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Consider claim 4, the best prior art of record found during the examination of the present application, Ikata (US 2001/0040487 A1) fails to specifically disclose, teach, or suggest a dualduplexer having a matrix structure wherein the first port is matched with the second and third ports with different frequency characteristics and the first port is independent from the fourth port; the second port is matched with the first and fourth ports with different frequency

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characteristics and the second port is independent from the third port; the third port is matched with the first and fourth ports with different frequency characteristics and the third port is independent from the second port; the fourth port is matched with the third and second ports with different frequency characteristics and the fourth port it is independent from the first port.

**Claim 7** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Consider claim 4, the best prior art of record found during the examination of the present application, Ikata (US 2001/0040487 A1) fails to specifically disclose, teach, or suggest a dualduplexer having a matrix structure wherein the first port is matched with the second and third ports with different frequency characteristics and the first port is independent from the fourth port; the second port is matched with the first and fourth ports with different frequency characteristics and the second port is independent from the third port; the third port is matched with the first and fourth ports with different frequency characteristics and the third port is independent from the second port; the fourth port is matched with the third and second ports with different frequency characteristics and the fourth port it is independent from the first port.

### ***Conclusion***

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to:**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450



**Hand-delivered responses** should be brought to

Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Bobbak Safaipour whose telephone number is (571) 270-1092. The Examiner can normally be reached on Monday-Friday from 9:00am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matthew Anderson can be reached on (571) 272-4177. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

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/Bobbak Safaipoor/  
Examiner, Art Unit 2618

November 23, 2008

/Matthew D. Anderson/

Supervisory Patent Examiner, Art Unit 2618